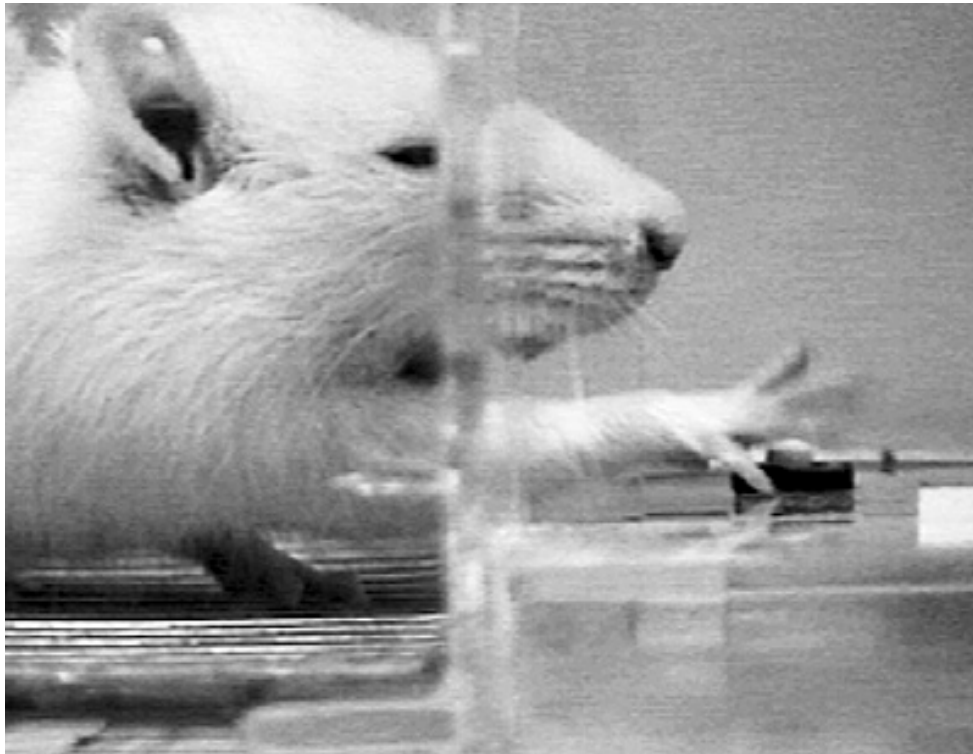


Psy202 Chapter 9/10

Designing/conducting experiments

Experimental question



Measuring the dependent variable

- Types of measures
 - Self-report—SF36 health questionnaire
 - Behavioral--# of doctor, hospital visits
 - Physiological—blood pressure
- Multiple measures
- Sensitivity of the dependent variable
 - Interval/ratio vs. nominal
 - Floor and ceiling effects

Additional Considerations

- Research proposals
- Pilot studies
- Manipulation checks
- Debriefing

Analyzing and interpreting results

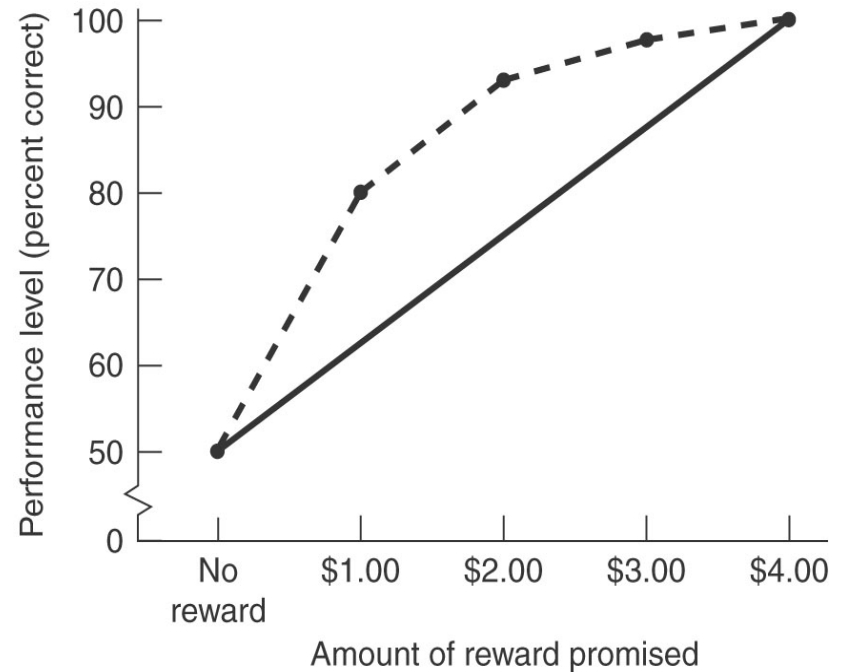
- Does the statistical procedure match the experimental question and levels of measurement of variables?
- If not, is this explained?

Dissemination of information

- Professional meetings
 - Conferences and symposia and/or posters
- Journal articles
 - Peer-review research studies
 - vs. non-peer review, chapters, books

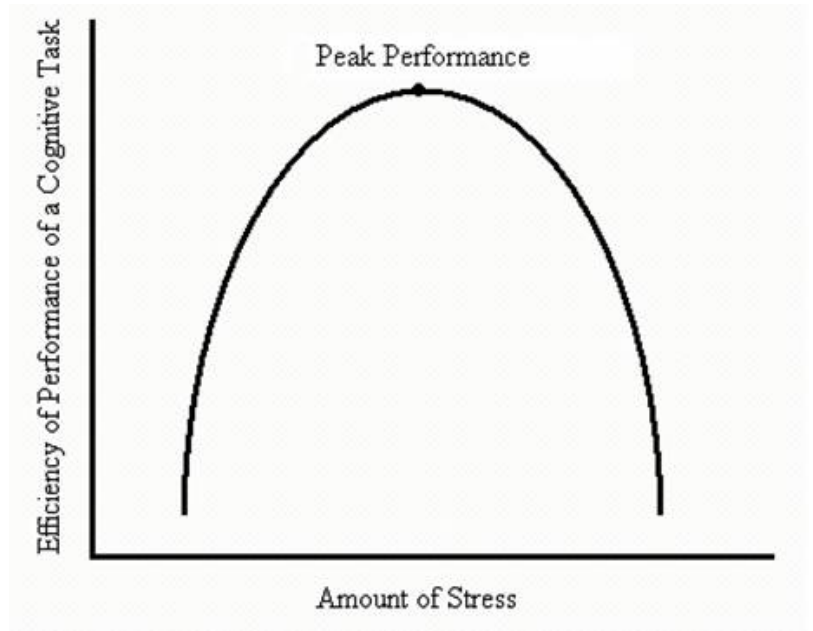
Increasing the levels of an IV

- Two levels only
- Measures linear effects
 - What if relationship is non-linear?
 - Will you capture the true relationship?



Increasing the levels of an IV (con't.)

- What if relationship is non-linear (con't.)
 - e.g., an inverted-U
- When more than two is a better experimental question



Factorial Designs

- How does socializing affect how much you eat in a movie theater?
 - Have confederate initiate in conversation or not (IV1)
 - Also have confederate eat more or less (IV2)

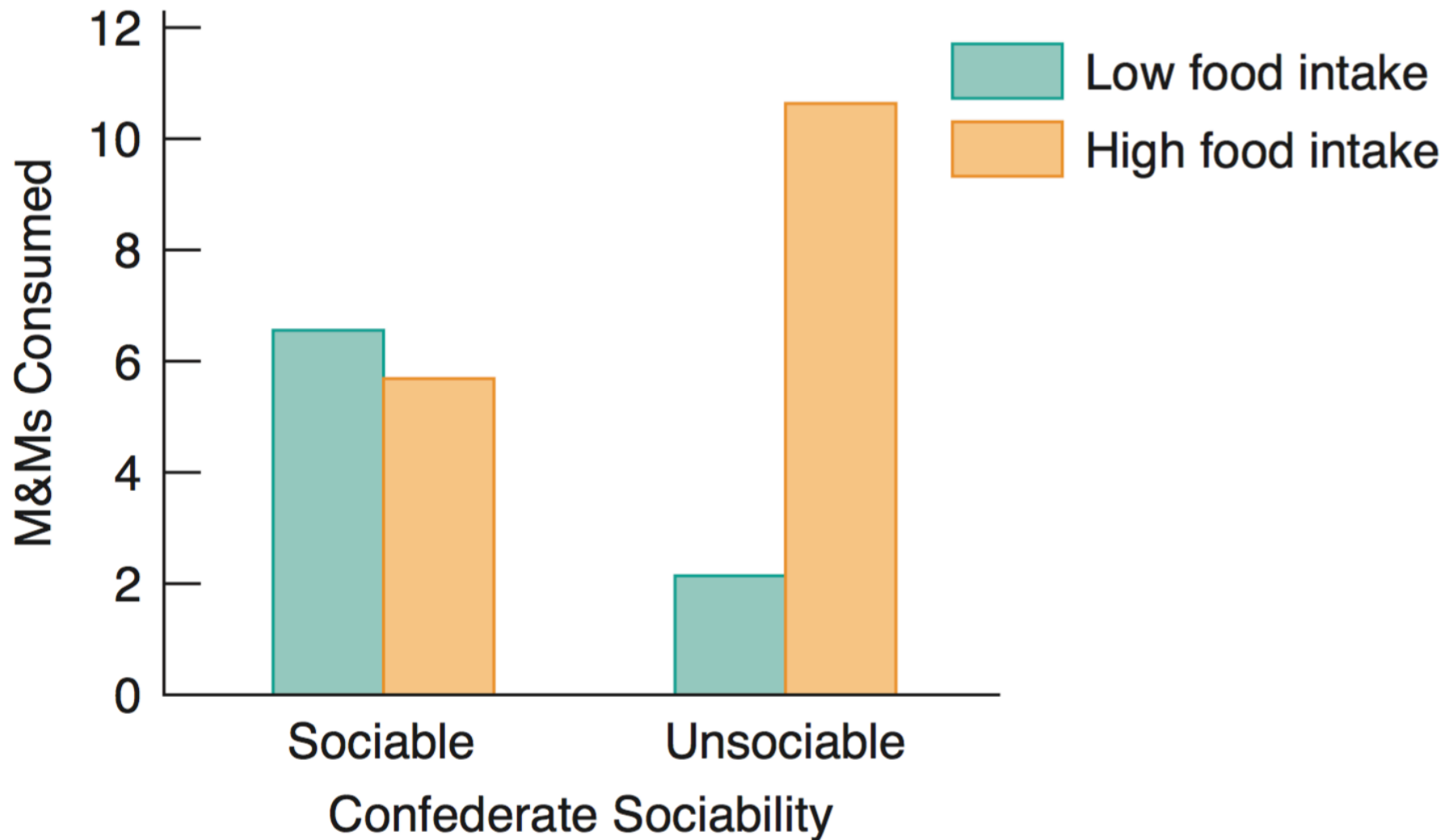
2X2 Design – Simplest factorial

	Independent variable A: Confederate sociability	
Independent variable B: Confederate food intake	Sociable	Unsociable
Low	Sociable/ low food intake	Unsociable/ low food intake
High	Sociable/ high food intake	Unsociable/ high food intake

Interpretation

- Main effect – the effect of each IV separately
- Interaction – how each IV interacts with each other to produce the DV

Confederate food intake (independent variable B)	Confederate sociability (independent variable A)		Overall means (main effect of B)
	Sociable	Unsociable	
Low	6.58	2.14	4.36
High	5.68	10.63	8.16
Overall means (main effect of A)	6.13	6.39	



Factorial Designs

Increasing the number of IV's

- More than one IV or “factor”
- Simplest Case
 - Two by two
 - 2×2
 - Each IV has two levels
 - The 2×2 design has four experimental conditions

Factorial Designs

Increasing the number of IV's

- More complex cases
 - 2 X 3
 - 3 X 4
 - 2 X 2 X 2
- Levels
- Experimental conditions

Interpretation of factorial designs in eyewitness testimony

- IV: 2 (type of question) x 2 (questioner) design
- DV = recall accuracy (mean % error)
- Main effects
 - Type of question effect
 - Questioner effect
- Interactions
 - Does the effect of one IV depend on the level of the other IV

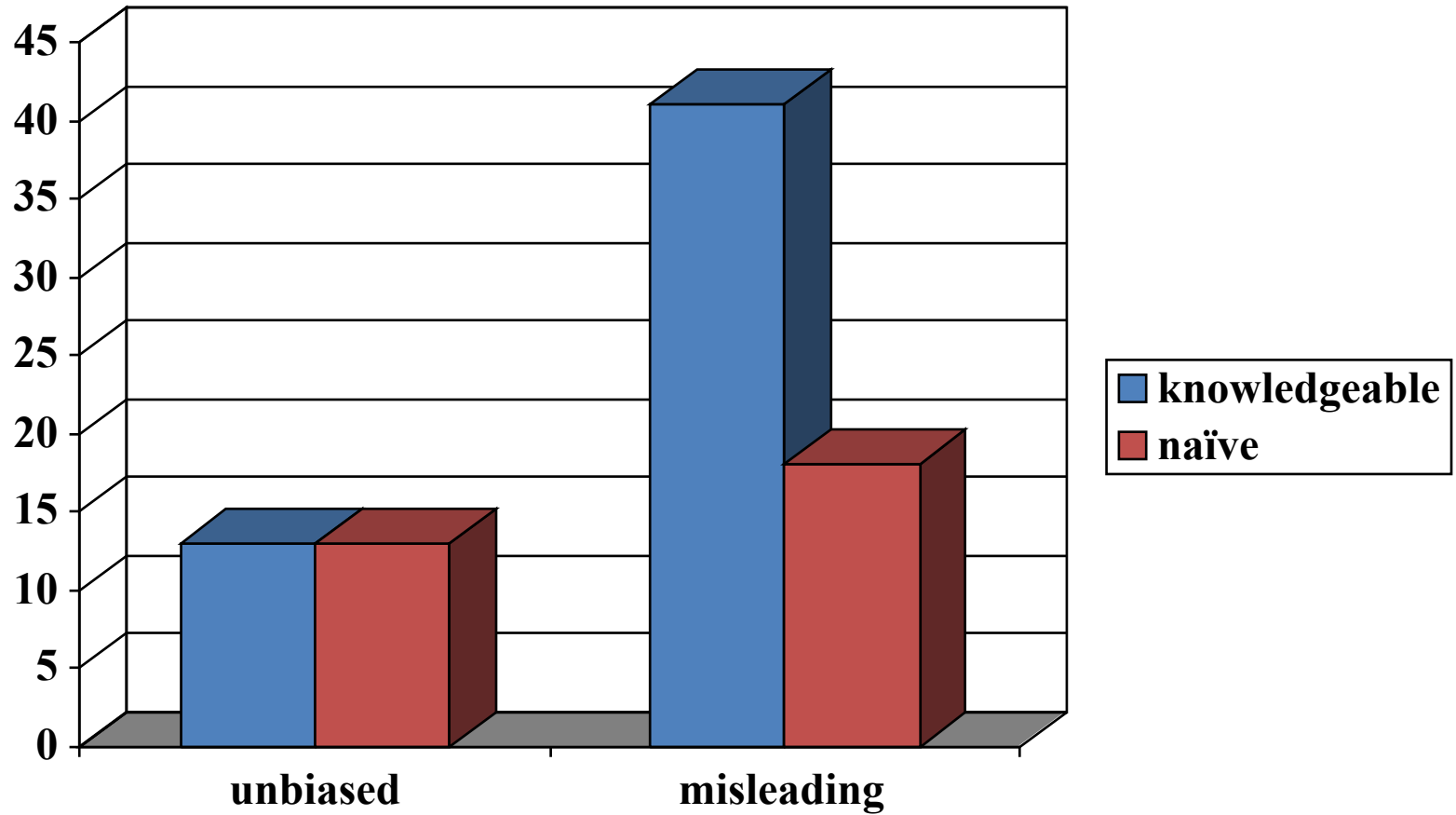
Percent errors in recall

Main effects

Questioner type	Type of question		Overall means (questioner)
	Unbiased	Misleading	
Knowledge	13	41	27.0
Naïve	13	18	15.5
Overall means (Q type)	13	29.5	

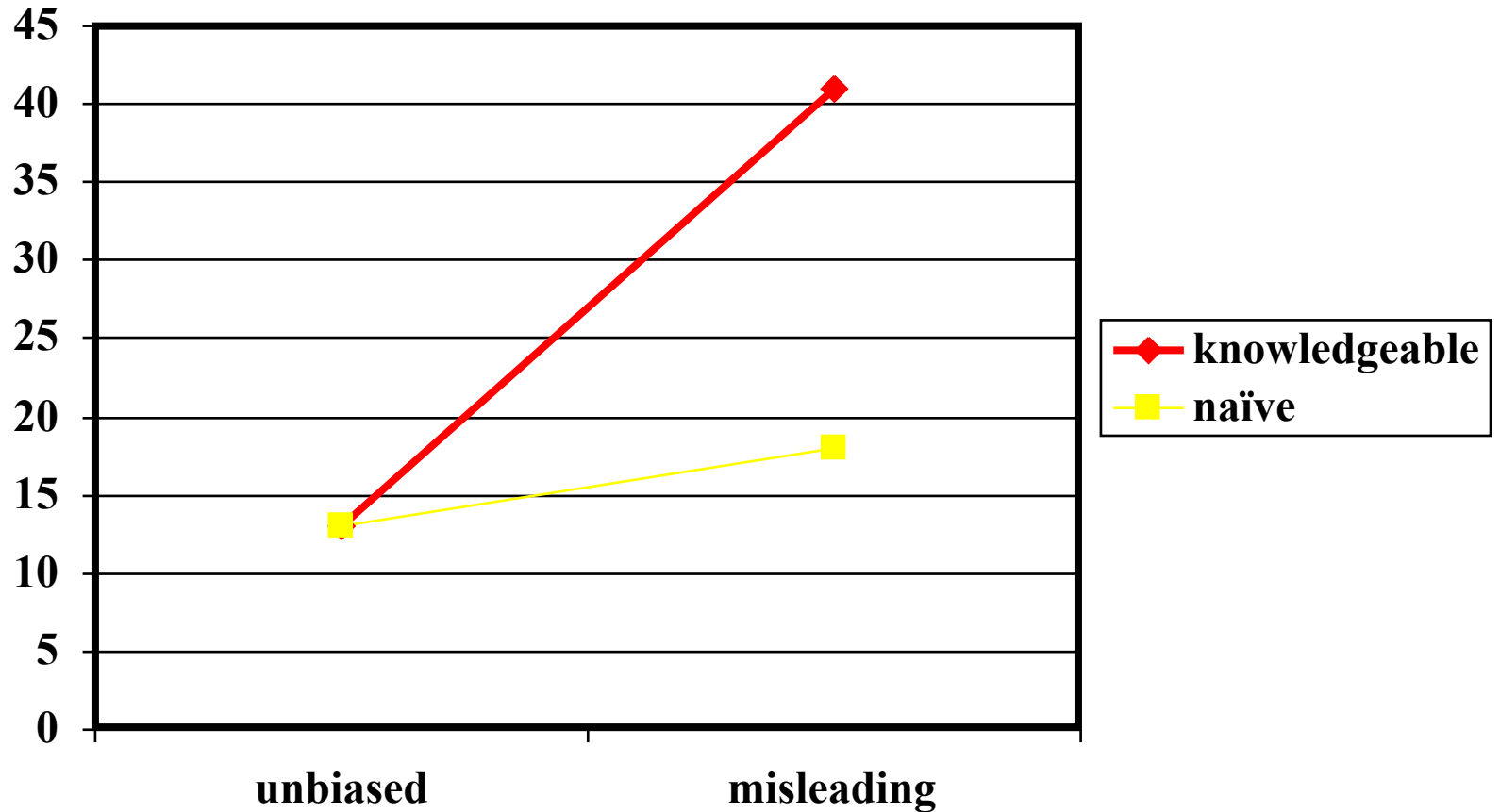
Percent errors in recall

Interactions



Percent errors in recall

Interactions (con't.)



Example 1

Administrators at a hospital evaluated the effectiveness of clinical treatment for depression by comparing patients assigned to group therapy or individual therapy. Self-reported measures of global improvement were obtained after 6 months of treatment and again after 12 months of treatment. Patients described their overall emotional state at the time of the survey compared to the start of their tx. Percentage improvement scores were collected.

- Identify the IV(s) and the levels for each IV
- Identify the total number of conditions
- Identify the manipulated variable(s)
- Create a factorial table (values will be given soon)

Example 1

	<u>Type of</u>	<u>Tx</u>	Marginal Means
<u>Length of tx</u>	Group	Individual	
6 months	32	42	
12 months	44	44	
Marginal Means			

Main effects?

Interaction? (hint: draw a figure)

Example 1 (con't.)

- **IMPORTANT:** For these factorial exercises, we determine apparent main effects and apparent interactions. **ONLY** a statistical test (e.g, ANOVA) can determine significance of effects.

Example 2

- A researcher was interested in the effects of music on learning. Students were randomly assigned to complete a self-paced tutorial about word processing *or* excel under one of two conditions, background music playing Beethoven or Linkin Park. Learning performance was measured by the time (in minutes) required to complete the tutorial.
- Identify the IV(s) and the levels for each IV
- Identify the total number of conditions
- Is this a within or between subject comparison?
- Create a factorial table (values will be given soon)

Example 2 (con't.)

	<u>Type of</u>	<u>Program</u>
<u>Type of Music</u>	Word Processing	Excel
Beethoven	10	16
Linkin Park	13	7

Main effects?

Interaction? (hint: draw a figure)